

Claims

1. Drive joint for permitting a rotationally and axially fixed connection, nevertheless allowing a limited angular movement, between a first and a second shaft sub-section of a drive shaft, such as a longitudinal shaft for motor vehicles, which drive joint has an inner hub as an inner joint part and an outer hub as an outer joint part, as well as torque transfer means provided between them as additional joint parts, **characterized in that** the joint is structured in such a manner that when a certain axial force in the direction of one shaft sub-section towards the other shaft sub-section is exceeded, the joint parts disengage.

2. Drive joint according to claim 1, **characterized in that** the outer hub is configured as a deformation element.

3. Drive joint according to one of claims 1 or 2, **characterized in that** the outer hub is configured in such a manner that if a predetermined axial force on the drive shaft is exceeded, it allows disengagement of the inner hub from the outer hub, with plastic and/or elastic deformation.

4. Drive joint according to one of claims 1 to 4, **characterized in that** several raceways assigned to one another are provided in the inner hub and the outer hub, in which balls are accommodated

to transfer torque, and that a series of raceways of the inner hub runs at a slant to the axis of the inner hub, and is configured in such a manner that the raceways of the inner hub can be plastically and/or elastically deformed when the inner hub and the outer hub disengage, by means of the balls, at least at their drive-side end.

5. Drive joint according to at least one of the preceding claims, **characterized in that** the inner hub has an inner insertion gearing oriented coaxially to the axis of the inner hub, for accommodating an outer insertion gearing of one of the shaft sub-sections.

6. Drive joint according to at least one of the preceding claims, **characterized in that** the inner hub has a ring groove on its drive-side end, as an assembly aid.

7. Drive joint according to at least one of the preceding claims, **characterized in that** the joint has a weld flange for attachment to at least one of the shaft sub-sections on its drive-side and/or power-take-off-side end.

8. Drive joint according to claim 7, **characterized in that** the outer hub has a carrier housing having an accommodation region for the outer hub assigned to it, and that a lid is wedged in

between the accommodation region for the outer hub and the weld flange, on the inside of the carrier housing.

9. Drive joint that has a drive-side end and a power-take-off-side end, having

- an inner hub that has an inner hub axis and an outer contour, in which first inner running grooves and second inner running grooves are disposed, distributed alternately about the inner hub axis, whereby the first inner running grooves run proceeding from the drive-side end in the direction of the power-take-off-side end, and their groove root moves away from the inner hub axis as this happens, and whereby the second inner running grooves run proceeding from the power-take-off-side end in the direction of the drive-side end, and their groove root moves away from the inner hub axis as this happens,

- an outer hub that has an outer hub axis and an inner contour, in which first outer running grooves and second outer running grooves are disposed, distributed alternately about the outer hub axis, and the first inner running grooves lie opposite first outer running grooves, and the second inner running grooves lie opposite second outer running grooves, in each instance, and form a pair with them, in each instance, whereby the first outer running grooves run proceeding from the drive-side end in the

direction of the power-take-off-side end, and their groove root approaches the outer hub axis as this happens, and whereby the second outer running grooves run proceeding from the power-take-off-side end in the direction of the drive-side end, and their groove root approaches the outer hub axis as this happens,

- a ring-shaped cage having a spherical outer surface, which is disposed between the inner hub and the outer hub, and has radial windows, in accordance with the number of running groove pairs, in which balls that engage in the running grooves are guided, and whereby the cage is guided to be centered in the outer hub,

- first introduction contours provided in the inner surface of the outer hub, which are disposed on both sides of the first outer running grooves and make a transition, from the drive-side end, at a diameter that at least approximately corresponds to the outside diameter of the cage, at least approximately after half the axial length of the outer hub, into first cage centering surfaces that run at an incline in the direction of the cage axis, and are configured to be ball-shaped, in accordance with the spherically shaped contact surfaces of the cage,

- second introduction contours provided in the inner surface of the outer hub, which are disposed on both sides of the second

outer running grooves and make a transition, from the power-take-off-side end, at a diameter that at least approximately corresponds to the outside diameter of the cage, at least approximately after half the axial length of the outer hub, into second cage centering surfaces that run at an incline in the direction of the cage axis, and are configured to be ball-shaped, in accordance with the spherically shaped contact surfaces of the cage,

whereby centering of the cage takes place exclusively in the outer hub, and centering of the inner hub relative to the outer hub takes place exclusively by way of the balls.

10. Drive joint, particularly according to one of claims 1 to 9, **characterized in that** at least the contour of the second inner running grooves, and/or the contour of the first cage centering surfaces of the outer hub, and/or the contour of the spherical outer surface of the cage, and/or the elasticity of the outer hub, are coordinated with one another in such a way that radial widening is made possible at least in the region of the second outer running grooves, by way of the balls of the second row that are displaced radially outward.

11. Drive joint for a motor vehicle, which can be connected with a first shaft sub-section and a second shaft sub-section, whereby

the drive joint has an outer joint part and an inner joint part disposed axially within the former, in which ball raceways are formed on the inside of the outer joint part and on the outside of the inner joint part, and in which balls are disposed in the ball raceways and spaced apart from one another by means of a ball cage, characterized in that ridges that point radially inward are formed between the ball raceways of the outer joint part, which are shaped and dimensioned in such a manner that the ball cage remains geometrically and mechanically intact, to a great extent, if an axial force that leads to the inner joint part and the outer joint part being pushed into one another is exceeded.